

Initial Electronic Modeling Evaluation Workbook (EMEW) Review Response

Purpose: This form is used by the Air Dispersion Modeling Team (ADMT) to document ADMT's review of initial submittal of the EMEW and any attachments.

Date: September 20, 2024

Permit Application Number: 166930

New Source Review Project Number: 379022

ADMT Project Number: 9419

County: Galveston

Assigned Modeling Staff: Lifang Wang, P.E.

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Review Summary

ADMT has conducted a review of the initial Electronic Modeling Evaluation Workbook (EMEW) for Texas International Refining Company LLC provided on August 29, 2024. Based on the review, ADMT has the following comments that should be addressed in the final modeling submittal. Note: if ADMT did not comment on a section of the workbook, then the applicant's approach is considered reasonable.

1. General

Administrative Information:

Include NSR Project Number 379022 for the Facility Information's Project Number and update the Modeling Date with the final submittal.

Since the project site is located in Galveston County, update the UTM Zone to 15 in row 36.

Area Map:

Property line data maintained by the Air Permits Division show there are overlapping property boundaries for two regulated entities (RN102501160 and RN104955505) at the project site location. The area map provided shows the boundaries between RN102501160 (Texas International Terminals LTD) and RN111360525 (Texas International Refining Company LLC), but it did not have information regarding RN104955505. Explain the relationship between RN104955505 and the other two RN numbers with the final submittal.

The "Annotate schools within 3,000 ft of source's nearest property line" option was selected. Since the permit application indicates no schools within 3000 ft of the project site, unselect this option with the final submittal.

Since the "Non-industrial receptors are identified" option was selected, identify the area on the map, and include some documentation in the Receptor Grid section of the Model

Options sheet that describes the selection of the non-industrial receptors reported with the Health Effects Modeling results.

2. Additional Attachments

Source Group Descriptions:

EMEW attachment 3 includes a series of source scenarios/groups; however, discussions on the source groups were not provided. To help with the review, please provide some discussions on how the source scenarios/groups were determined, based on operating limitations, for developing worst-case scenarios.

Post Processing using Unit Impact Multipliers (UIMs):

Based on the documentation in the EMEW, generic modeling will be conducted. If post-processing calculations will be performed with the generic model output, mark the post-processing calculation option in row 88 and provide the calculations in an Excel spreadsheet with the final submittal.

3. Model Options

Project Overview:

Since this project will be evaluated as an as-built review, discuss the methodology and approaches followed for conducting the as-built analysis. Since the basis of emission rate in the emissions sheets represent maximum allowable, please confirm whether the analysis evaluates the project sources from the beginning with the changes incorporated for all pollutants.

D. Constituents Evaluating:

Please note that there are model limitations when using the ARM2 option and source groups. If source groups are to be used, model each source group in a separate model run.

E. Dispersion Options:

The EMEW references a review of land use within a three-kilometer radius from the project site. Provide this analysis with the final submittal.

F. Determination of Surface Roughness:

Please note that 2021 NLCD land cover, percent impervious, and tree canopy data are all available. ADMT recommends using the 2021 data with the AERSURFACE analysis.

G. Meteorological Data:

A profile base elevation of 7.6 m was listed in row 75. Please note that the profile base elevation for the Galveston County meteorological dataset is 7.3 m. Update the documentation and analysis accordingly.

H. Receptor Grid:

As noted above, since the EMEW includes results for a GLCni, document how the non-industrial receptors were determined.

Part of the property includes docks and areas of water near the docks. Since the modeling files were not provided, ADMT could not verify the receptor grid used in the

analysis. If any receptors over the docks or the water near the docks are removed, provide justification in the EMEW for this approach.

The EMEW notes that a single property line designation (SPLD) petition will be submitted, and that the modeling analysis will rely on the single property boundary. Please note that the approval of this petition should be finalized before the modeling audit review is completed by ADMT. Moreover, please check row 86 of the General tab to reflect a SPLD.

4. Flare Source Parameters

Two flares (Model IDs PORTFL_P and PORTFL_M) are noted as being portable. Please document how the locations of these two portable flares were determined for the modeling.

Since off-property sources are noted in the Sitewide scenario as being included in the 1-hr and annual NO₂ and 3-hr SO₂ full NAAQS analyses, please document clearly which off-property site they belong to (such as company name and RN number).

5. Point Source Parameters

Discuss the basis of the release heights for the source modeled with pseudo-point parameters (Model IDs CC_VAC, CC_FRAC, ATM_FRAC, CAS1 – CAS2, FRAC1 – FRAC6, and CAS3 – CAS5) with the final submittal of the EMEW.

Some of the sources (EPN PORTTO and MSS-CONT) are noted as being portable in the Intermittent Sources sheet. Please document how the locations of these portable sources were determined for the modeling.

For EPN MSS-CONT, please elaborate on the description of the miscellaneous equipment modeled and the selection of the modeled locations.

As noted above, since off-property sources are noted in the Sitewide scenario as being included in the 1-hr and annual NO₂ and 3-hr SO₂ full NAAQS analyses, please document clearly which off-property site they belong to (such as company name and RN number).

6. Area Source Parameters

For EPN MSS-ATM, please provide more description for these activities modeled as area sources, as well as the selection of the modeled locations.

7. Volume Source Parameters

Please provide a discussion on how the emissions from the tanks take place during normal operation.

8. Point and Flare Source Emissions

The EMEW lists a greater maximum allowable annual emission rate than the corresponding short-term maximum allowable emission rate for Model IDs B1_HI –

B6_HI for the NO₂ and PM_{2.5} analyses, and Model IDs B1_LO – B6_LO for the NO₂ analysis. Also, the EMEW lists 24-hr PM_{2.5} emission rates for Model IDs B1_LO – B6_LO, but not the corresponding annual PM_{2.5} emission rates in the PM_{2.5} SIL analysis. Lastly, the emission rates of Model IDs B1_LO – B6_LO were listed for the 1-hr and annual NO₂ and 3-hr SO₂ SIL analyses, but not for the 1-hr and annual NO₂ and 3-hr SO₂ full NAAQS analyses. Verify that each source has a proper emission rate modeled and documented in the EMEW.

Since the preliminary GLCmax results for PM₁₀ and PM_{2.5} are greater than the SILs, please also document the emission rates data for PM₁₀ and PM_{2.5} with the Minor Full NAAQS Review Context with the final submittal.

9. Intermittent Sources

There are reporting inconsistencies that will need to be addressed with the final submittal:

- For EPN EG-1 (rows 43, 44, and 56), it seems that the information in the “# Events per year” and “Hours per Event” columns were inadvertently switched.
- For EPN MSS-CONT (rows 37 – 42 and 53 – 55), the number of events and hours are not consistent with the justification. The justification lists 12 hrs/day for up to 4 days, but the “Hours per Year” lists 84 hours total.
- For all other rows, please document 7 events for “# Events per year” in column I and 12 hours for “Hours per Event” in column J.

The EMEW lists “No” for the “Emergency Engine?” option for EPN EG-1 in cell G56, while “Yes” for this same engine in cells G43 and G44. Address the inconsistency with the final submittal.

Please document information in the “Describe any other justification for intermittent” column for rows 43 – 47 and rows 56 – 58.

Lastly, please provide documentation on where the portable control devices will be located to further support the use of intermittent guidance.

10. Modeling Scenarios

Since the EMEW mentions including off-property sources, please provide all of the documentation used to develop the modeled parameters for these off-property sources (e.g., previous modeling analysis, APAD, permit files, etc.).

11. Monitor Calculations

Since the preliminary GLCmax results for PM₁₀ and PM_{2.5} are greater than the SILs, please also address monitoring data for the PM₁₀ and PM_{2.5} NAAQS analyses with the final submittal.

For the NO₂ analysis, the monitoring data from 2022 and 2023 for the proposed monitor (AQS ID 481671034) are not complete. In general, if NO₂ monitoring data do not meet completeness criteria, an analysis can be conducted using the substitution test procedures from Appendix S to 40 CFR Part 50 to demonstrate these data are still valid

to use. However, for the second quarter of 2023, the percentage of valid data is less than 50%, and the substitution test cannot be used. Below are a couple of options to consider:

- Selecting a different monitor that has complete data (or one that would pass any substitution tests).
- Though data are less than 50%, make a case for still using the data. Examine other years to show that data collected over the time of missing data from 2023 is consistent from year-to-year, and there is no reason to believe it would be missing some high values.

12. Background Justification

For the NO₂ monitor, the 10 km emissions reported around the project site are much greater than the reported emissions around the monitoring site. Since off-property sources have been modeled, ADMT recommends determining how much of these reported emissions around the project site are accounted for with the sources explicitly modeled. Add up the reported emissions from the sites explicitly modeled. Then subtract that amount from the reported emissions, and the emissions left (the part not included in the modeling) should be less than what is reported around the monitor. If the reported emissions around the project site is still not less than the reported emissions around the monitoring site, please extend the search area to include more surrounding off-property sources to model until the reported emissions left is less than the monitoring site. Alternatively, a different monitor, with a greater amount of surrounding emissions, can be considered for the analysis.

Lastly, ADMT cannot verify the reported emissions around the project site and the monitoring sites for the NO₂ and SO₂ monitors. Please clearly document and provide the reported emissions calculation process with the final submittal.

13. NAAQS/State Property Line Modeling Results

Although preliminary results were provided, the modeling files were not submitted for review. Therefore, the reported results could not be verified. It is recommended for future submittals that the preliminary modeling files be provided with the EMEW for review.

Since the preliminary GLCmax results for PM₁₀ and PM_{2.5} are greater than the SILs, please address the PM₁₀ and PM_{2.5} full NAAQS analyses.

14. Unit Impact Multipliers

Although preliminary results were provided, the modeling files were not submitted for review. Therefore, the reported results could not be verified. It is recommended for future submittals that the preliminary modeling files be provided with the EMEW for review.

15. Health Effects Modeling Results

Although preliminary results were provided, the modeling files were not submitted for review. Therefore, the reported results could not be verified. It is recommended for future submittals that the preliminary modeling files be provided with the EMEW for review.

As noted above, please document the GLCni determination approach in the Receptor Grid section on the Model Options sheet. And related to the GLCni reported, since the GLCni is located at a transient receptor and the overall GLCni is greater than the ESL, ADMT recommends providing the highest GLCni at a non-transient receptor in addition to the overall GLCni.

The emissions documentation reflects sitewide modeling. If the analysis represents sitewide modeling for all pollutants, please report the results for all pollutants under the sitewide columns (Step 7).

Since a SPLD petition will be submitted and the modeling will use a receptor grid based on the single property boundary, please verify whether the other tenant(s) of the SPLD have any emissions of the pollutants being modeled sitewide. If so, these emissions need to be addressed in the analysis as well.

Lastly, based on the preliminary modeling results, ADMT recommends coordinating with the permit reviewer and the Toxicology Division to discuss the preliminary modeling results.

16. Modeling File Names

Please list the NLCD file names for the AERSURFACE analysis and provide them with the final submittal.

Document all downwash file extensions and provide the downwash files with the final submittal.

For full documentation purposes, please indicate in cell E53 that this modeling file is for the SO₂ State Property Line analysis.

Lastly, document any attachments (supplemental AQA for the scenario descriptions, post-processing calculation in an Excel spreadsheet, area map, plot plan, etc.) included with the EMEW.

Please be aware that federal and state standards can change over the life of a project, therefore, the facility may be asked to update EMEW to reflect applicable changes. Any deviations or information not submitted with the initial modeling workbook could cause delay in the final modeling review. ADMT highly recommends submitting an updated initial EMEW if significant changes are made to the modeling methodologies previously reviewed.